Transit Oriented Developments

The following is a synopsis of the contributions and responses regarding the subject of transit oriented development (TOD). The primary motivation for the discussion was identifying the industry practice for forecasting transit ridership increases associated with TODs. The inquiry and discussion occurred in November, 2010 and expanded to include a debate regarding the potential influence transit oriented developments may have on reducing automobile vehicle miles of travel (VMT).

Transit Oriented Development Overview

Based on contributions to the listserv, a transit oriented development could be defined as a compact and diverse development located in close proximity to transit that offers attractive environments and conditions for non-auto travel. If implemented properly, TODs offer a compelling link between land use diversity and density with increased transit utilization. Contributors noted that the benefits of TODs extend beyond increased transit ridership. Potential by-products include social and environmental benefits as well as improved investment productivity. Indeed, it is the linkage between density and diversity that makes TODs attractive planning strategies for reducing or at the very least off-setting automobile VMT growth. This is in stark contrast to conventional development which is characterized by its auto-centric low-density development that is evident in most urbanized areas.

Forecasting Transit Oriented Developments

Travel demand models were recognized as the most effective tool available for forecasting TODs. When a demand model is not available, there appears to be several potential project level resources available. One contributor noted that there are, “a number of “sketch models” or “planning support tools”” available. The tools are generally geographic information system (GIS) based and/or graphically based spreadsheets that are designed to operate at the tax lot and real estate project scale, according to the same contributor. Another contributor noted two specific published documents as potential resources: Transit Cooperative Research Program (TCRP) #95 (*Travel Response to Transportation System Changes*) and a 2010 Journal of American Planning Association (JAPA) article (*Travel and the Built Environment: A Meta-Analysis*).

Forecasting Considerations

Based on relatively few responses, it appears that the two primary variables that need to be captured in any analysis are the land use characteristics in proximity to the new transit station as well as the service characteristics of the particular station under study. One contributor promoted a tool that has been utilized to examine transit ridership. The specific input variables associated with this tool highlight the scope of issues that could be given consideration during any analysis. These are aimed at quantifying transit station characteristics, which include the following inventory of variables:

- Land uses within walking distance of the station,
- Feeder transit network service,
- Station parking characteristics, and
- Pedestrian and bike access characteristics.

Forecasting Challenges

One contributor noted that a comprehensive tool that analyzes all of the potential variables does not exist. Others noted the following issues associated with off-model tools:

- Availability of off-model software (i.e. proprietary versus open-source),
- Scalability of results (e.g. sketch/project level that is not transferrable to the region),

- Insensitive nature of these tools to accommodate macro-level issues (e.g. changes in fuel price, economy).

In contrast, a noted advantage of utilizing off-model systems is the apparent simplicity that may be afforded by these tools and the relative confidence associated with the results (if the results are based on existing case studies).

Given these challenges, one contributor recommended that the process of forecasting ridership numbers should be de-emphasized and, "more emphasis should be placed on risk management and enterprise, and market design and management," of the TOD. The City of Portland was specifically mentioned as an example of having strong TOD/pedestrian oriented development (POD) guidelines in greenfield settings that apparently have succeeded in increasing transit use and walk access.

TODs and Auto VMT Reduction

The nexus between TODs and auto VMT reduction is simply a fiat according to some contributors. The success of these specific types of developments relies on the ability to provide diverse access to and from the development, including auto access. Consequently, some of the new trips associated with the development are made by automobiles. As noted, any new development will increase auto VMT (e.g. existing auto VMT plus additional VMT created by the new development).

As noted by contributors to the discussion, transit oriented developments do not completely eliminate auto trips (or the need for auto trips) because these types of developments are not exclusively served by transit or other forms of non-vehicular access. TODs simply provide the mechanism to pursue other forms of mobility. According to one contributor, "TODs should not be generally seen as an auto trip reduction strategy".

Other contributors felt that local traffic (e.g. pedestrian and transit) generated by the development is more than enough to off-set the new auto trips to the development. As far as forecasting the amount of new transit trips to the development, one contributor offered that, "the fraction of new or added trips generated by the TOD that are transit satisfied goes up relative to background levels that were previously exclusively satisfied by auto."

Reinforcing the discussion regarding auto VMT, a specific contributor noted examples of development that occurs in Texas independent of significant transit access (i.e. rail) which mimics key concepts associated with TODs, such as providing mixed-use development in a pedestrian-friendly atmosphere (e.g. high-rise residences juxtaposed in close proximity to retail shops). The contributor noted that these developments can be successful irrespective of any transit presence because high-density, mixed-use developments offer an alternative experience for specific end users (i.e. high-end retail shoppers). The contributor conceded that these developments are solely successful because nearby parking (e.g. parking garages) provides convenient access for high-end retail shoppers. Without this type of auto access, it is highly questionable whether these mixed-use retail/resident patterns could succeed.

Conclusions

In the absence of having a travel forecasting model, there are a number of documented resources and sketch planning tools available for project level analysis. As noted by contributors, these sketch planning methods are limited in scope and context to be considered useful for region-wide analysis. Consequently, travel demand models are recognized as the

most effective tool for forecasting transit ridership estimates associated with the implementation of transit oriented developments.

Based on the limited contributions, most of the contributors to the discussion believe that a properly designed TOD with pedestrian friendly access will increase transit ridership. Debate exists as to how effective TODs are at reducing or off-setting VMT associated with automobiles.